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Survey of rove beetles (Coleoptera, Staphylinidae) from Stanley Park, Vancouver, British Columbia, Canada, with new records and description of a new species. Part 2

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Abstract

The second survey in 2008 of rove beetle species from Stanley Park, Vancouver, British Columbia, Canada is presented. Fifty-one species were found from the following subfamilies: Aleocharinae (18), Micropeplinae (1), Omaliinae (11), Osoriinae (1), Oxytelinae (2), Paederinae (1), Proteininae (2), Pselaphinae (3), Steninae (1), Staphylininae (8), and Tachyporinae (3). All species are listed in Tables 1 and 2. Thirty-five species were previously recorded from the storm-undamaged sites in 2007, including 16 species that were site-specific. Fifty-one species are reported from the storm-damaged sites, including 31 species that are site-specific. There are 19 species in common between storm-damaged and undamaged sites. Sixty-seven species of rove beetles are now known from all the sites studied in Stanley Park. One new species, *Sonoma squamishorum* Chandler & Klimaszewski, **sp. n.**, is described and illustrated. *Proteinus collaris* Hatch is recorded from Canada and British Columbia for the first time. Four adventive aleocharine species are recorded.

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Keywords
British Columbia, Canada, Coleoptera, new species, Staphylinidae, Stanley Park, survey, Vancouver

Introduction

This is the second paper devoted to rove beetles from Stanley Park. It includes species from samples collected in the storm-damaged forest in December 2006 (Figs. 1, 2 A-D). The first paper described species collected in 2007 from portions of the forest undamaged by the storm (McLean et al. 2009). The purpose of this paper is to compare the rove beetle fauna in the storm-damaged areas surveyed in 2008 with the 2007 collection from the undamaged forest, and to describe and document a new species of Pselaphinae.

Study locations

The 2008 study sites included a stand west of the South Creek Trail (49°18′03″, 123°08′25″W) (Fig. 1, Site C) which had been burnt over in a fire in 1860. The high stumps (Fig. 2C) are a remnant from that period. The site was cleared of all fallen trees

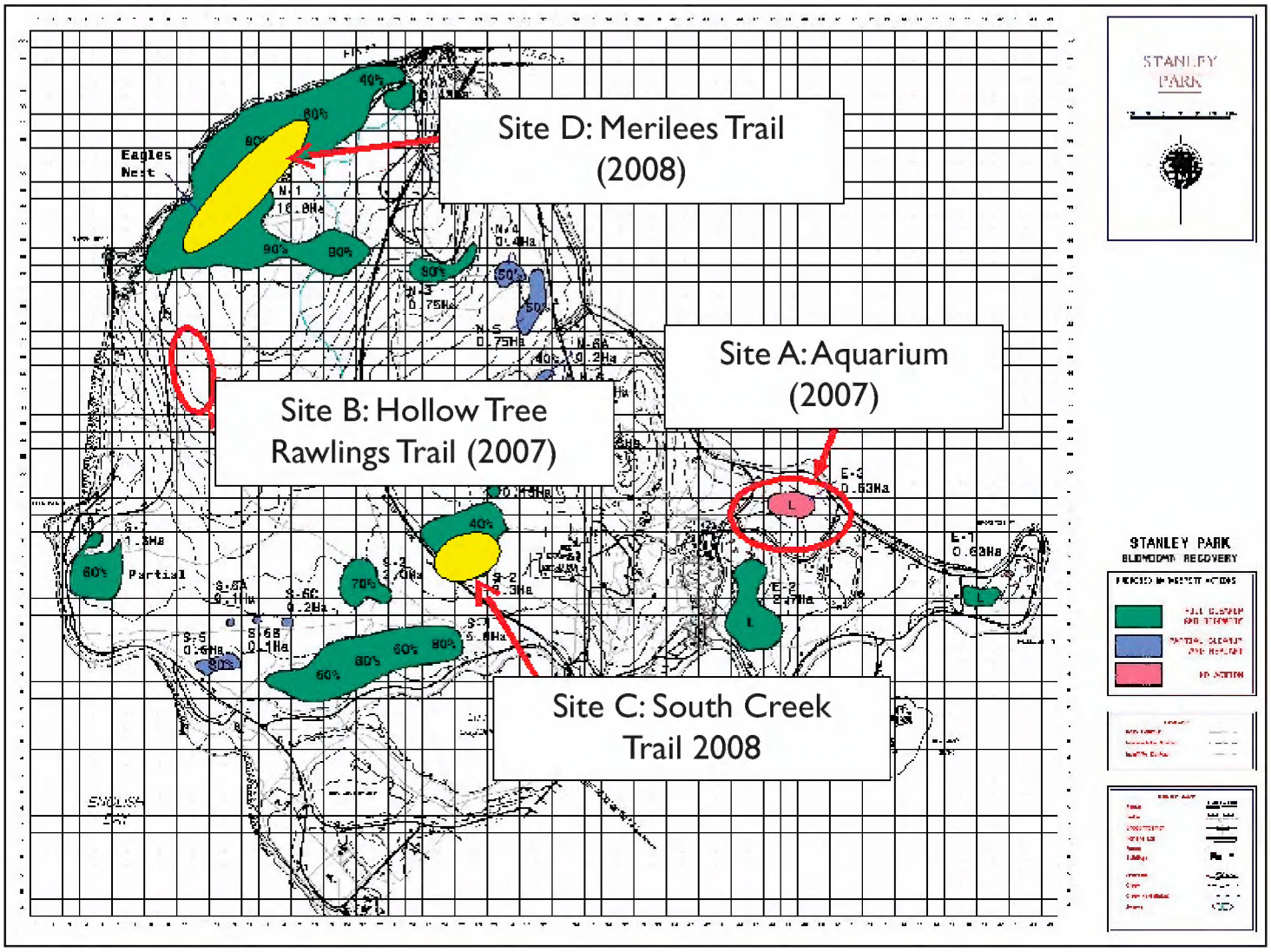

Figure 1. Map of Stanley Park, Vancouver, British Columbia, showing collecting locations for the 2007 and 2008 insect surveys.

and replanted in the fall of 2007 with clumps of Douglas-fir (*Pseudotsuga menziesii* (Mirbel) Franco) and western red cedar (*Thuja plicata* Donn ex. D. Don). The second 2008 study site was along Merilees Trail (Fig. 1, Site D) (49°18′40″N, 123°09′02″W) which has also been cleared and replanted with the same plant regime as Site C (Fig. 2D). The 2008 sites were much more open than the "intact" 2007 sites.

Material examined

More than 466 adult rove beetles were examined, and most aleocharines and pselaphines were dissected. The genital structures were dehydrated in absolute alcohol and mounted in Canada balsam on celluloid microslides and pinned with the specimens from which they originated.

Traps were set out on April 23, 2008 and collected monthly through October. At each site, five Lindgren multiple-funnel traps and a flight-intercept trap were set and a pitfall trap was placed near each of the hanging traps. Polypropylene glycol was used in all traps for preserving captured insects. The Lindgren traps were baited with specific pheromones and/or ethanol or alpha-pinene lures. The pitfall traps were unbaited. The collecting periods for each species are shown in Table 1.

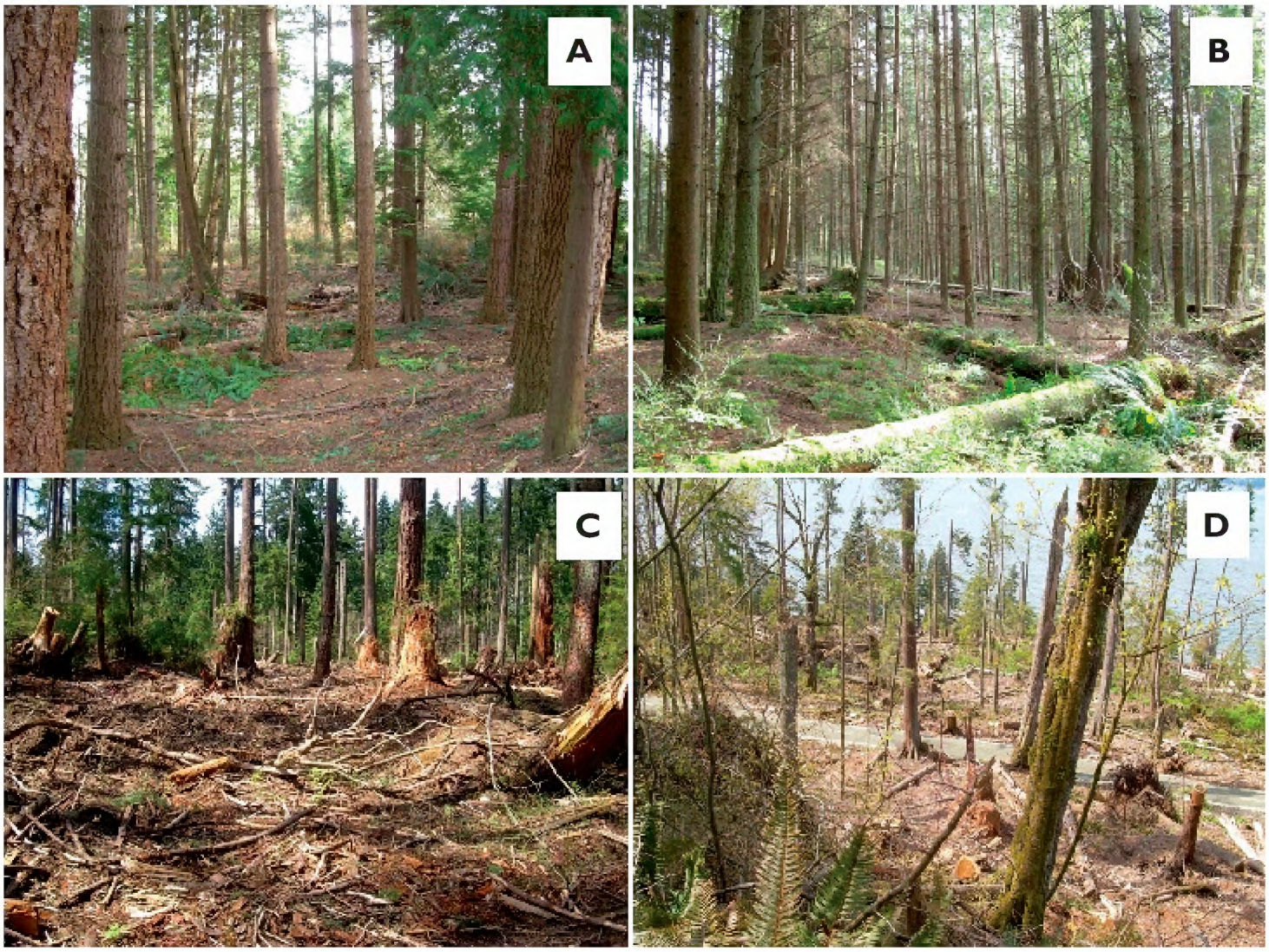

Figure 2. Collection sites A-D. Site **A**: Aquarium (2007). Site **B**: Hollow Tree/Rawlings Trail (2007). Site **C**: South Creek Trail (2008). Site **D**: Merilees Trail (2008).

The larger catches found in the hanging traps did not indicate any preferences of the staphylinid beetles for any of the semiochemical baits for bark beetles or wood borers. Trap catches were quite even among traps suggesting that the trap form and shape was consistent for all species.

The following references were used for identification in this study: Campbell (1973), Benick and Lohse (1974), Hatch (1957), Klimaszewski (2000), Klimaszewski et al. (2001), Klimaszewski and Winchester (2002), Klimaszewski et al. (2004), Klimaszewski et al. (2006), Klimaszewski et al. (2007), Newton et al. (2001), Seevers (1978), and Smetana (1971).

Conventions

Repository abbreviations:

CNC Canadian National Collection of Insects, Arachnids and Nematodes, Agriculture and Agri-Food Canada, Ottawa, Ontario, Canada

LFC Natural Resources Canada, Canadian Forest Service, Laurentian Forestry Centre, Quebec City, Quebec, Canada

UBC University of British Columbia, Spencer Entomological Collection, Beaty Biodiversity Museum, Vancouver, British Columbia, Canada

UNHC University of New Hampshire, Department of Zoology, Durham, New Hampshire, U.S.A.

Systematics

Supertribe Faraonitae, Tribe Faronini
***Sonoma* Casey, 1886**

For diagnosis and literature review, see Marsh and Schuster (1962), with addenda by Park and Wagner (1962), and Chandler (1986 and 2003).

***Sonoma squamishorum* Chandler & Klimaszewski, sp. n.**
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Figs 3–6

Specimens examined. Holotype. Male. CANADA: British Columbia: Vancouver, Stanley Park, Merilees Trail, CWH (49 18′40″N, 123 09′02″W), V-22/VI-27-2008, J.A. McLean & A. Li, funnel trap 1 (CNC). Paratype female: same park, South Creek Trail, CWH (49 18′03″N, 123 08′25″W), VI-27/VII-31-2008, J.A. McLean & A. Li, funnel trap 5 (UNHC).

Etymology. This species is named in recognition of the Squamish aboriginal people who are known to have lived in this area of Vancouver. It took until 2008 for the Musqueam, Squamish and Tsleil-Waututh, who traditionally used the land that is now Stanley Park, to be physically represented at the site. That has now been addressed with People Amongst the People, three gateways covered with designs in threes and multiples of three to represent the three aboriginal groups, a work created by Susan Point and her team of Musqueam carvers.

Diagnosis. Body small for *Sonoma*; frontal sulcus of head Y-shaped; discal foveae deeply impressed and impressions continued posteriorly to antebasal sulcus. Males with gula prominent and setose; aedeagus with phallobase separated, parameres nearly symmetrical, penis simple.

Description. Length 1.68–1.76 mm. Body light orange-brown (Fig. 6). Head about as long as wide; tempora broadly rounded and distinct; frontal sulcus deep, abruptly widened in apical half to nearly twice basal width, forming a thick "Y", sulcus about as long as wide, base of sulcus even with midpoint of eyes; vertexal foveae distinct, posterior to point even with hind margin of eyes; eyes with about 60 facets in both sexes. Pronotum with each discal fovea at anterior margin of slightly converging impressions that extend to antebasal sulcus, median antebasal foveae distinct, nude; antebasal sulcus broad between lateral constrictions, narrow beyond constrictions to nude lateral antebasal foveae. Elytra half again as long as pronotum; foveal pattern 4–2–4 (four foveae in sutural stria, four in discal sulcus, and two faint foveae in longitudinal line between them, foveae difficult to see on dried specimens). Abdomen as long as elytra in dorsal view.

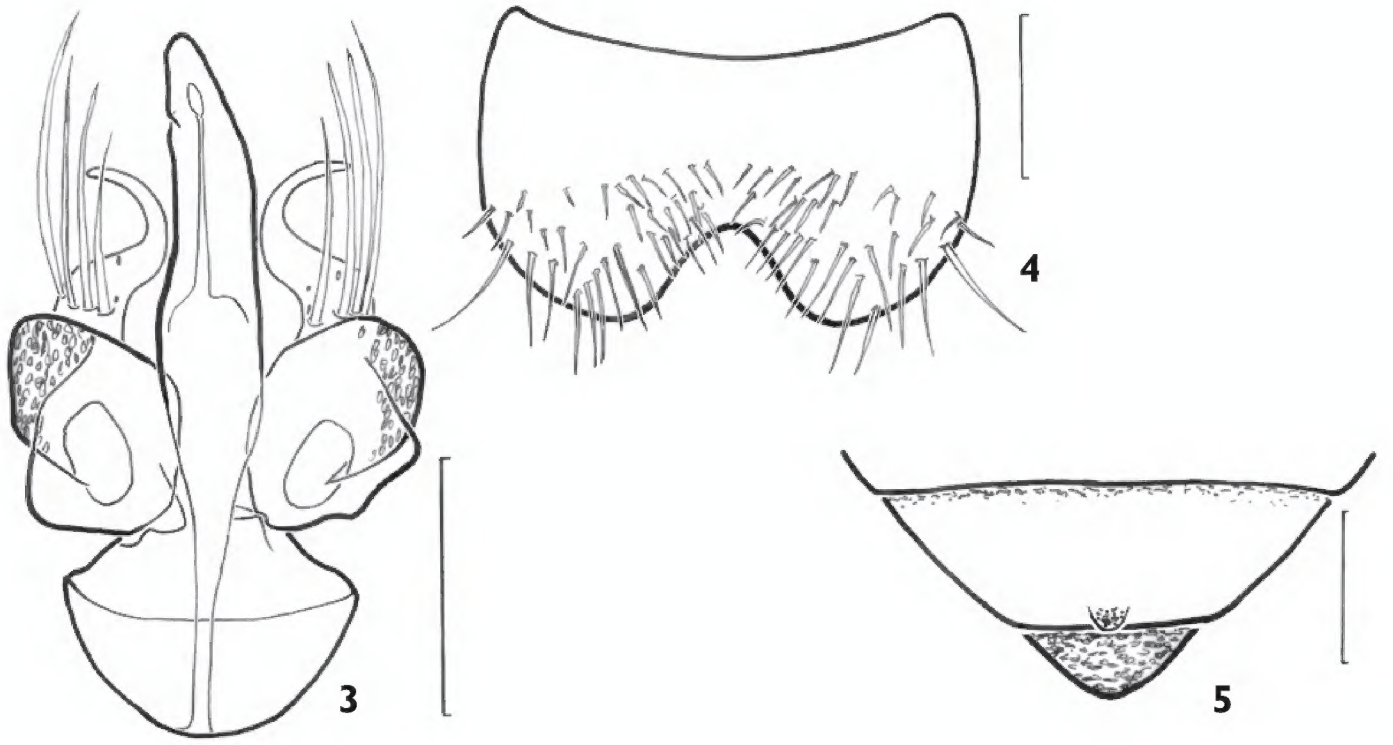
Males with posterior portion of gular area transversely projecting and densely setose. Legs lacking modifications. Abdomen with complete microsetigerous line near apex of visible tergite 1 (morphological segment 4). Visible sternites 4–5 progressively more strongly medially impressed, fifth visible sternite with prominent oblique and posteriorly directed acute projections at lateral third of sternite, projections strongly setose and extending posteriorly for short distance over anterior portion of sternite 6; sternite 6 with loose cluster of elongate spines to each side of middle (Fig. 4). Aedeagus of general form of *Sonoma grandiceps* Casey (Fig. 3); parameres with apical portions symmetrical, bases appearing slightly dissimilar, with coarse punctation on lateral portion of bases; penis elongate and of nearly even width in apical two-thirds, slightly asymmetrical.

Females with gula slightly convexly curved, lacking dense setae. Abdomen with sternite 6 symmetrical, apex broadly and shallowly curved, with small granulate raised area at middle slightly projecting posteriorly (Fig. 5); sternite 7 flat and granulate (Fig. 5).

Distribution. Only known from Stanley Park in Vancouver, British Columbia.

Collection and habitat data. Both specimens were collected with funnel traps, and so the preferred habitat of this species is unknown. However, this collecting technique is particularly effective in trapping species that are associated with downed, dead, or dying trees, and the suspected habitat is in rotting wood. Several species of this

Figure 6. *Sonoma squamishorum*, dorsal view (holotype). Apical part of abdomen removed.



Figures 3–5. *Sonoma squamishorum.* Scale line equals 0.1 mm: **3** ventral view male genitalia **4** ventral view male sternite 6 **5** ventral view female sternites 6–7.

genus have a strong association with downed rotting logs and are found beneath loose bark or in logs that may be torn apart by hand (Chandler 2003).

Comments. *Sonoma squamishorum* appears to be closest to *S. grandiceps* Casey, 1893, known only from the type series taken in Santa Cruz, California in the late 1800's, and *S. tehamae* Chandler, 2003, known only from a single site in northern California. The males of these species share a strongly basally-constricted phallobase, nearly symmetrical parameres with a row of long setae, and a densely setose and prominent gula. *Sonoma grandiceps* is the most similar species based on aedeagal form and the prominent setose projections of the fifth abdominal sternite, and is separated from *S. squamishorum* by the slightly asymmetrical apices of the large curved spine of each paramere, and the lack of the coarse lateral punctation of the parameres found in *S. squamishorum*. The apical portion of the penis is slightly more asymmetrical in *S. grandiceps*, and *S. tehamae* has a much more asymmetrical penis, and lacks the apical curved spines of the parameres and the setose projections of abdominal sternite 5.

Faunistic account - results and discussion

This paper treats rove beetles captured from storm-damaged sites in Stanley Park, Vancouver, British Columbia, Canada. Collecting yielded 51 rove beetle species in the following subfamilies: Aleocharinae (18), Micropeplinae (1), Omaliinae (11), Osoriinae (1), Oxytelinae (2), Paederinae (1), Proteininae (2), Pselaphinae (3), Staeninae (1), Staphylininae (8), and Tachyporinae (3). All species are listed in Tables 1 and 2. Sixty-seven species of rove beetles in total are reported from all stud-

ied sites (A-D) (Table 1). Thirty-five species (52.2% of the total from sites A-D) were previously recorded from the storm-undamaged sites (Fig. 2A, B, Table 2), including 16 species (23.8% of the total from sites A-D) which were site specific (not found in the second survey) (McLean et al. 2009). Fifty-one species (76.1% of the total from sites A-D) are herein reported from the storm-damaged sites (Fig. 2 C, D), including 32 species (47.7% of the total from sites A-D) site specific (Tables 1, 2). There are 19 species (28.3% of the total from sites A-D) shared between storm-damaged and undamaged sites (Table 2). The substantial increase in number of species at sites C and D was to be expected because the storm damaged areas of the forest provide a more diversified habitat. There is more forest edge, some fragments of an old forest, more dead snags and logs, and many disturbed soil habitats providing opportunities for a greater species diversity of rove beetles. The species composition is different in the AB and CD sites, except for the 19 species (28.3%) which are in common (Table 2). There are differences between the dominant species in the studied sites (Table 2). *Atheta cheersae* Klimaszewski, a common species in disturbed forest, was not found in the undisturbed forest, *Atheta ventricosa* Bernhauer occurred in smaller numbers in disturbed forest; *Leptusa gatineauensis* Klimaszewski and Pelletier was better represented in disturbed areas of the park; and *Oxypoda stanleyi* Klimaszewski and McLean was more numerous in undisturbed forest. *Stictalia brevicornis* Casey was numerous in disturbed sites but was not found in the undisturbed sites where *Stictalia californica* Casey was present. *Deinopteroloma subcostatum* (Mäklin), *Eusphalerum pothos* Mannerheim, and *Oropus striatus* (LeConte) were more numerous in the disturbed sites. *Actium retractum* Casey, *Sonoma squamishorum* sp. n., *Gabrius forcipatus* (Hatch), *Pelecomanium testaceum* (Mannerheim), and *Tachinus maculicollis* Mäklin occurred only in the disturbed sites and *Deinothenarus pleuralis* (LeConte) only in undisturbed sites. Clearly different rove beetle species appear to prefer different habitats. There are many singletons present only at either site. Additional adventive species, *Xantholinus linearis* (Olivier), 1 female, and *Atrecus macrocephalus* (Nordmann), 1 female, were reared from logs collected in the park but are not included in the tables and are excluded from our calculations.

Proteinus collaris Hatch is recorded from Canada and British Columbia [Stanley Park] for the first time. Three adventive aleocharine species are recorded from the storm-damaged sites (B and/or C) are: *Aleochara curtula* (Goeze), *Mocyta fungi* (Gravenhorst), and *Oxypoda opaca* (Gravenhorst). The adventive species *Aleochara fumata* (Gravenhorst) and *Dalotia coriaria* (Kraatz), previously recorded from storm-undamaged sites, are not recorded from storm-damaged sites, and *A. curtula* was not recorded from the undamaged sites.

Klimaszewski and Winchester (2002) published the first comprehensive survey of aleocharine beetles from the ancient Sitka spruce forest in Carmanah Valley on Vancouver Island, British Columbia. They recorded 40 species, including 10 species new to science, in nine different tribes: Aleocharini (3 sp.), Athetini (20 sp.), Autaliini (1 sp.), Homalotini (5 sp.), Hypocyphtini (1 sp.), Lomechusini (1 sp.),

Myllaenini (1 sp.), Oxypodini (5 sp.), and Placusini (3 sp.). In the Stanley Park survey, only 25 species of aleocharines were recorded in five tribes: Aleocharini (2 sp.), Athetini (15 sp.), Homalotini (3 sp.), Oxypodini (2 sp.), and Placusini (3 sp.). Species from the tribes Autaliini, Hypocyphtini, Lomechusini, and Myllaenini were absent from Stanley Park. The dominant group at both study sites was Athetini with 20 species captured in Carmanah Valley and 15 in Stanley Park. There were 8 species in common between the two sites but no adventive species were recorded from the Carmanah native forest.

Table 1. List of rove beetles captured in Stanley Park, Vancouver, British Columbia, Canada. Subfamilies and species are listed alphabetically. New distribution records are in bold case. Adventive species are indicated with an asterisk (*). Canadian provinces and territories and American states are abbreviated. Site A is located in the area adjacent to the Vancouver Aquarium and site B along the Rawlings Trail near the Hollow Tree; site C along South Creek Trail, and site D along Merilees Trail. Two species represented by singletons, *Atrecus macrocephalus* (LFC, 1 female) and *Xantholinus linearis* (Olivier)* (LFC, 1 female, tentative identification pending on capturing a male) were reared from logs and are excluded from the tables below.

Subfamilies and species	Distribution in Canada and Alaska	Collecting sites in Stanley Park				Collecting period	Depository
		Sites A, B	Specimens captured	Sites C, D	Specimens captured		
ALEOCHARINAE							
Acrotona sp.	BC	--	-	D	1	VII-VIII	LFC
Amischa sp. 1	BC	A	1	--	-	VIII-X	LFC
Amischa sp. 2	BC	A, B	3+1?	D	1	V, VI, VIII, X	LFC, UBC
Aleochara curtula (Goeze)*	BC, ON, QC, NB, NS, NF&LB	--	-	C	3	V, VII, VIII	UBC
Aleochara fumata (Gravenhorst)*	AB, BC, MB, NB, NS, ON, PE, QC, YT	A	1	--	-	VII-VIII	UBC
Atheta (*Metadimetrota*) *cheersae* Klimaszewski	BC	--	-	C	21+1?	IX-X	LFC, UBC
Atheta (Dimetrota) hampshirensis Bernhauer	AK, BC, NB, NS, QC	A, B	2	--	-	VII, VIII	UBC
Atheta (*Pseudota*) *nescia* (Casey)	BC	--	-	C	1	VI-VII	UBC
Atheta (Atheta) ringi Klimaszewski	BC	A	1	C	2	IV-VII	LFC, UBC
Atheta (Alaobia) ventricosa Bernhauer	AK, BC, ON, NB, YT	A, B	20	C	6	V-X	LFC, UBC
Atheta sp. 1	BC	--	-	C, D	6	IV-VI, IX-X	LFC, UBC

Subfamilies and species	Distribution in Canada and Alaska	Collecting sites in Stanley Park				Collecting period	Depository
		Sites A, B	Specimens captured	Sites C, D	Specimens captured		
Atheta sp. 2	BC	--	-	C	1	IV-V	LFC
Atheta sp. 3	BC	--	-	D	1	IV-V	LFC
Dalotia coriaria (Kraatz)*	AB, ON, BC	B	1	--	-	VII	UBC
Leptusa gatineauensis Klimaszewski	ON, QC, NS, BC	A, B	2	C, D	7	IV, V, VIII, IX	LFC, UBC
Liogluta sp.	BC	--	-	CD	2	V-VI, IX-X	LFC
Mocyta fungi (Gravenhorst)*	ON, QC, NB, NF & LB, NS, BC	A	2	D	1	IV-V, VII-VIII	UBC
Oxypoda opaca (Gravenhorst)*	ON, NS, BC	A	1	D	3	IV-V	UBC
Oxypoda stanleyi Klimaszewski & McLean	BC	A, B	26	C, D	17	IV-VII	LFC, UBC
Placusa incompleta Sjöberg * or Holarctic	BC, QC, NS	--	-	C	1	VI-VII	UBC
Placusa tacomae Casey	YT, NT, BC, AB, ON, QC, NS	A, B	5	--	-	V, VI, VII	UBC
Placusa vaga Casey	BC, QC	A	1	C	1	VII-VIII	UBC
Stictalia brevicornis Casey	BC	--	-	C, D	17	IV-VII, IX-X	LFC, UBC
Stictalia californica (Casey)	BC	A, B	4	--	-	V, VII, VIII-X	UBC
MICROPEPLINAE							
Micropeplus punctatus LeConte	AK, BC	A, B	4	C, D	5	IV-V, VII, IX-X	LFC, UBC
OMALIINAE							
Acidota crenata (Fabricius)	AK, BC, AB, SK, MB, ON, QC, NB, NS, PE, NF&LB	--	-	C	1	VII-IX	UBC
Acrulia sp.	AK, BC	--	-	D	2	IX-X	LFC, UBC
Acrulia tumidula (Mäklin)	AK, BC	A	1	--	-	IV	UBC
Amphichroum maculatum (Horn)	BC	--	-	D	2	IV-V	UBC
Anthobium fimetarium (Mannerheim)	AK, BC	B	3	C	3	VIII-X	LFC, UBC
Amphichroum floribundum LeConte	BC	--	-	C	2	IV-V	LFC, UBC

Subfamilies and species	Distribution in Canada and Alaska	Collecting sites in Stanley Park				Collecting period	Depository
		Sites A, B	Specimens captured	Sites C, D	Specimens captured		
Amphichroum maculatum Horn	BC	B	1	C	59	IV-VI	UBC
Deinopteroloma subcostatum (Mäklin)	AK, BC	A, B	12	D	33	V- X	UBC
Eusphalerum pothos Mannerheim	AK, BC, AB, ON, QC, NB, NS, NF	B	18	D	107	IV-VIII	UBC
Hapalaraea megarthroides (Fauvel)	BC, AB	B	1	--	-	VIII-X	UBC
Pelecomanium testaceum (Mannerheim)	AB, BC	--	-	D	5 + 3?	IV-VII	LFC, UBC
Phloeonomus laesicollis (Mäklin)	AK, BC, AB, ON, QC, NS, NF	B	1	C, D	3	VI-IX	UBC
Phlaeopterus sp.	BC	--	-	D	2	IX-X	LFC, UBC
OSORIINAE							
Renardia nigrella (LeConte)	AB, BC	--	-	C, D	4	VI-X	LFC, UBC
OXYTELINAE							
Ochthephilus sp.	BC	--	-	C	2	IX-X	UBC
Oxytelus laqueatus (Marsham)*	AK, BC, YT, AB, SK, MB, ON, QC, NB, NS	A, B	8	--	-	VII, VIII	LFC, UBC
Syntomium grahami Hatch	AK, BC, QC, NB, NF	A	1	C	1	V-VII	UBC
PROTEININAE							
Megarthrus pictus Motschulsky	AK, BC	A	1	--	-	VIII-X	UBC
***Proteinus collaris* Hatch**	BC [first Canadian record]	--	-	C	1	IV-V	UBC
Proteinus limbatus Mäklin	AK, BC, ON	B	2	C	4	VIII-X, IX-X	LFC, UBC
PSELAPHINAE							
Oropus striatus (LeConte)	BC	A, B	13	D	62	IV, V, VI, VII, VIII-X	UBC, UNH
***Sonoma squamishorum* sp. n. Chandler & Klimaszewski**	BC	--	-	D	2	IV-VI	CNC UNH

Subfamilies and species	Distribution in Canada and Alaska	Collecting sites in Stanley Park				Collecting period	Depository
		Sites A, B	Specimens captured	Sites C, D	Specimens captured		
Actium retractum Casey	BC	--	-	D	1	IV-V	UBC
PAEDERINAE							
Lathrobium sp.	BC	B	1	--	-	VI-VII	UBC
Medon sp.	BC	--	-	D	1	IV-V	LFC
STAPHYLININAE							
Atrecus macrocephalus (Nordmann)	BC, AB, NT, ON, QC, NB, NS, NF&LB	--	-	C, D	4	V-IX	LFC, UBC
Dinothenarus pleuralis (LeConte)	BC, AB	A	12	--	-	IV, V, VI, VIII	LFC, UBC
Gabrius forcipatus (Hatch)	BC	--	-	CD	12	IV-VI	LFC, UBC
Gabrius virilis (Horn)	BC	A	1	--	-	IV-V	UBC
Philonthus sp.	BC	--	-	D	1	VIII-IX	UBC
Quedius aenescens Mäklin	AB, BC	--	-	D	1	V-VI	UBC
Quedius crescenti Hatch	BC	A, B	6	D	8	VI-VIII	CNC, LFC, UBC
Quedius griffinae Hatch	BC	--	-	C, D	2	VI-VII	LFC, UBC
Quedius oculeus (Casey)	BC	--	-	D	1	VI-VII	LFC
Quedius sp 1.	BC	--	-	D	1	IV-V	LFC
STENINAE							
Stenus sculptilis Casey	BC	--	-	D	1	IV-V	UBC
TACHYPORINAE							
Ischnosoma pictum (Horn)	AB, BC, MB, ON, QC, NB, NF&LB, NS, PE	--	-	D	1	VII-VII	LFC
Mycetoporus sp.	BC	B	1			V	
Tachinus crotchi Horn	BC	A, B	7	--	-	VII, VIII	LFC, UBC
Tachinus maculicollis Mäklin	BC	--	-	C, D	34	VII-X	LFC, UBC
Tachinus nigricornis Mannerheim	AK, BC, AB	B	1	--	-	VII	UBC
Tachinus semirufus Horn	AK, BC	A, B	20	C, D	6	V-VII	LFC, UBC

Table 2. List of species site specific to A and/or B, and C and/or D, and common in all sites (A, B, C, D). Adventive species are marked with an asterisk (*).

Species which are site specific to A and/or B	**Species which are site specific to C and/or D**	**Species common to all sites** (A, B, C, D) or at least one in A, B or C, D category
ALEOCHARINAE	**ALEOCHARINAE**	**ALEOCHARINAE**
Amischa sp. 1	*Acrotona* sp.	*Amischa* sp. 2
Aleochara fumata (Gravenhorst)*	*Aleochara curtula* (Goeze)*	*Atheta* (*Atheta*) *ringi* Klimaszewski
Atheta (*Dimetrota*) *hampshirensis* Bernhauer	*Atheta* (*Metadimetrota*) *cheersae* Klimaszewski	*Atheta* (*Alaobia*) *ventricosa* Bernhauer
Dalotia coriaria (Kraatz)*	*Atheta* (*Pseudota*) *nescia* (Casey)	*Leptusa gatineauensis* Klimaszewski & Pelletier
Placusa tacomae Casey	*Atheta* sp. 1–3	*Mocyta fungi* (Gravenhorst)*
Stictalia californica (Casey)	*Liogluta* sp.	*Oxypoda opaca* (Gravenhorst)*
OMALIINAE	*Placusa incompleta* Sjöberg*	*Oxypoda stanleyi* Klimaszewski & McLean
Acrulia tumidula (Mäklin)	*Stictalia brevicornis* Casey	*Placusa vaga* Casey
Hapalaraea megarthroides (Fauvel)	**OMALIINAE**	**MICROPEPLINAE**
OXYTELINAE	*Acidota crenata* (Fabricius)	*Micropeplus punctatus* LeConte
Oxytelus laqueatus (Masham)*	*Acrulia* sp.	**OMALIINAE**
PAEDERINAE	*Amphichroum maculatum* (Horn)	*Anthobium fimetarium* (Mannerheim)
Lathrobium sp.	*Amphichroum floribundum* LeConte	*Amphichroum maculatum* Horn
PROTEININAE	*Pelecomalium testaceum* (Mannerheim)	*Deinopteroloma subcostatum* (Mäklin)
Megarthrus pictus Motschulsky	*Phlaeopterus* sp.	*Eusphalerum pothos* Mannerheim
STAPHYLININAE	**OSORIINAE**	*Phloeonomus laesicollis* (Mäklin)
Dinothenarus pleuralis (LeConte)	*Renardia nigrella* (LeConte)	**OXYTELINAE**
Gabrius virilis (Horn)	**OXYTELINAE**	*Syntomium grahami* Hatch
TACHYPORINAE	*Ochthephilus* sp.	**PROTEININAE**
Mycetoporus sp.	**PAEDERINAE**	*Proteinus limbatus* Mäklin
Tachinus crotchi Horn	*Medon* sp.	**PSELAPHINAE**
Tachinus nigricornis Mannerheim	**PROTEININAE**	*Oropus striatus* (LeConte)
	Proteinus collaris Hatch	**STAPHYLININAE**
	PSELAPHINAE	*Quedius crescenti* Hatch
	Sonoma squamishorum sp. n.	**TACHYPORINAE**

Species which are site specific to A and/or B	**Species which are site specific to C and/or D**	**Species common to all sites** (A, B, C, D) or at least one in A, B or C, D category
	Actium retractum Casey	
	STENINAE	*Tachinus semirufus* Horn
	Stenus sculptilis Casey	
	STAPHYLININAE	
	Atrecus macrocephalus (Nordmann)	
	Gabrius forcipatus (Hatch)	
	Philonthus sp.	
	Quedius aenescens Mäklin	
	Quedius griffinae Hatch	
	Quedius oculeus (Casey)	
	Quedius sp. 1	
	TACHYPORINAE	
	Ischnosoma pictum Horn	
	Tachinus maculicollis Mäklin	
16 species	**32 species**	**19 species**

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